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EXAMINER	
JOO, JOSHUA	
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SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/055,650	TRAVERSAT ET AL.	
	Examiner	Art Unit	
	Joshua Joo	2154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-64* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-64* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Action

Response to Amendment dated 1/29/2007

1. Claims 1-64 are presented for examination.

Response to Arguments

2. Applicant's arguments with respect to claims 1-64 have been considered but are moot in view of the new ground(s) of rejection. Applicant argued that:

3. (1) Nowhere does Davis and Meyer describe any peer-to-peer protocols for enabling peers to discover each other. While Davis and Meyer may describe node communicating with each other, the mere fact that a channel may be established between two endnodes does not imply that the two nodes are "enabled to discover each other".

4. In response, Meyer has been withdrawn due to Applicant's amendment. According to Davis, peers in a peer-to-peer network communicate with each other (col. 8, lines 19-39; col. 8, lines 25-28) according to protocols (col. 74, lines 64-67. verbs for communication and coordination. col. 9, lines 5-13. Protocols inherent for establishing session.). The peers must be determined, i.e. discovered, for the peers to connect and communicate with each other. Furthermore, the determining of peer nodes is considered as performing according to a peer-to-peer protocol since the protocols used for communication are performed by peers in a peer-to-peer network.

5. (2) Claim 1 recites particular peer-to-peer platform protocols for enabling the plurality of peer nodes to discover each other, communicate with each other, and share content in the peer-to-peer protocols, wherein to discover comprises obtaining an address for each discovered peer. Davis and Meyer do not describe such a set of protocols.

6. In response, claim 1 recites, "one or more peer-to-peer platform protocols". Given the broadest reasonable interpretation, the claim may be interpreted as one peer-to-peer protocol or peer-to-peer platform protocols for enabling the plurality of peer nodes to discover each other, communicate with each other, and share content with each other. Furthermore, a "set of protocols" are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Davis teaches of peers that discover each other, communicate with each other, and share content with each other in a peer-to-peer network (col. 9, lines 5-8, 23-34; col. 75, lines 3-5). In Davis' teachings, protocols used to discover, communicate, and share content meet the scopes of the claimed "one or more peer-to-peer platform protocols". Therefore, the protocols are considered as peer-to-peer protocols.

Meyer has been withdrawn due to Applicant's amendment. Davis does not specifically teach of a peer-to-peer platform protocol wherein to discover comprises obtaining an address for each discovered peer node. Dreke teaches of peers enabled to discover each other, communicate with each other, and share content with each other (Paragraph 0004. Peers exchange information. Paragraph 0017. Request list of peers.), wherein to discover comprises obtaining an address for each discovered peer node (Paragraph 0017. Receive IP addresses of Peers). Dreke's teachings also meet the scopes of the claimed "one or more peer-to-peer platform protocols", and therefore, the peers communicate according to peer-to-peer protocols.

7. (3) Both Davis and Meyers, whether considered singly or in combination, fails to teach or suggest the particular peer-to-peer platform protocols recited in claim 1 and further fail to teach or suggest wherein said establishing, said transmitting, said receiving, and said retransmitting are performed according to at least one of the one or more peer-to-peer protocols.

8. In response, as previously stated, Davis teachings of peers that discover each other, communicate with each other, and share content with each other in a peer-to-peer network (col. 9, lines 5-8, 23-34; col. 75, lines 3-5) meet the scopes of the claimed "one or more peer-to-peer platform protocols", and therefore, the peers are considered as communicating according to as peer-to-peer protocols. Furthermore, Davis also teaches of said establishing, said transmitting, said receiving, and said retransmitting among the peers in the peer-to-peer network (col. 9, lines 5-8, col. 58, lines 1-3, col. 73, lines 44-47). In Davis' teachings, protocols used for steps of said establishing, said transmitting, said receiving, and said retransmitting meet the scope of the claimed "peer-to-peer protocols" and are also considered as performing according to the peer-to-peer protocols. Merely claiming that the steps are performed in "peer-to-peer protocols" does not differentiate the "peer-to-peer protocols" from transport protocols that support the steps for peers in a peer-to-peer environment.

Specification

9. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

i) Regarding claim 1, Applicant has corresponded the limitation of "separately from the network transport protocols" to sections of the specification (page. 22, lines 23-24; pages 51-58; page 53, lines 22-30). However, the specification still does not provide clear antecedent basis for the claimed subject matter.

ii) Regarding claims 45-64, the limitation of "article of manufacture" lacks sufficient antecedent basis in the specification.

Examiner suggests amending the specification, page 137, lines 12-17, to recite, "a carrier medium may be an article of manufacture and may include storage media or memory media such as magnetic or optical media, e.g., disk or CD-ROM, volatile or nonvolatile media such as RAM (e.g. SDRAM, DDR, SDRAM RDRAM, SRAM, etc.), ROM, etc. Carrier medium may be transmission media or signals and may include electrical, electromagnetic, or digital signals, conveyed via a communication medium such as network and/or a wireless link."

Claim Rejections - 35 USC § 101

10. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

11. Claims 45-64 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Applicant is seeking to patent an article of manufacture comprising software instructions. The claims may be interpreted as software instructions per se since the article of manufacture does not comprise functional hardware. The claimed invention of software instructions does not meet one of the four categories of invention and is not statutory. Specifically, software instructions is not a series of steps or acts and thus is not a process. Software instructions is not a physical article or object and as such is not a machine or manufacture. Software instructions is not a combination of substances and therefore not a composition of matter.

Furthermore, the software instructions are executable to implement various steps, e.g. establishing, transmitting, receiving, but the claimed invention is not actually executing the instructions. The claimed invention does not produce a useful, tangible, and concrete result and is not directed to a practical application of a judicial exception.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 1-3, 5-7, 11-15, 18, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis et al. US Patent #6,105,064 (Davis hereinafter), in view of Dreke et al. US Publication #2002/0035594 (Dreke hereinafter) and Narisi et al. US Patent #6,233,619 (Narisi hereinafter).

14. As per claim 1, Davis teaches substantially the invention as claimed including a method, system, and an article of manufacture for dynamically adjusting windows in a peer computing system, Davis's teachings comprising:

a plurality of peer nodes operable to couple to a network (col. 8, lines 21-24. Peer nodes.), wherein each of the plurality of peer nodes comprises one or more network interfaces; wherein each network interface is configured to communicate over the network in accordance with at least one or more network transport protocols (col. 9, lines 5-8. Endnodes establish network communication session. Col. 5, lines 40-44. Protocol for controlling data packets.);

wherein the plurality of peer nodes is configured to implement a peer-to-peer environment on the network according to a peer-to-peer platform comprising one or more peer-to-per platform protocols (col. 8, lines 21-24. Peer-to-peer network.) for enabling the plurality of peer nodes to discover each other, communicate with each other; and share content in the peer-to-peer environment (col. 75, lines 3-5. Sending endnode request connection with receiving endnode. col. 9, lines 5-8, 23-34. Establish connection for sending data.);

wherein one of the plurality of peer nodes is configured to:

establish a communications channel between a network interface of the peer node and a network interface of another of the plurality of peer nodes(col. 9, lines 5-8. Endnodes establish network communication session.);

transmit messages to the other peer node over the communications channel (col. 9, lines 25-28; col. 59, lines 1-3. Transmits data.);

receive acknowledgement that one or more of the transmitted messages have been received by the other peer node (col. 59, lines 1-3. Acknowledges packets.); and

retransmit messages not acknowledged as received by the other peer node to the other peer node on the communications channel (col. 73, lines 44-47. Unacknowledged packets are retransmitted.).

15. Davis teaches substantial features of the claimed invention including said establishing, said transmitting, said receiving, and said retransmitting in a peer-to-peer environment. Davis does not specifically teach to discover comprising of obtaining an address for each discovered peer node. Davis also does not specifically teach that communicating in the at least one of the one or more peer-to-peer platform protocols is performed separately from the at least one network transport protocols.

Dreke teaches of peers obtaining IP addresses of interested peers (paragraph 0017).

16. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Davis and Dreke for peers to obtain the IP addresses of other peers, which would enhance the system of Davis by providing the peers with presence information to contact other peers.

17. Davis and Dreke still do not specifically teach that the communicating in the at least one of the one or more peer-to-peer platform protocols is performed separately from the at least one network transport protocols.

Narisi teaches of heterogeneous systems (also considered as peers, col. 19, line 60-col 20, line 5) communicating in a message system that is independent of communication protocols (claims 1, 3, and 7).

18. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Davis, Dreke, and Narisi for peers to communicate independent of communications protocols. The teachings of Narisi would enhance the system of Davis and Dreke by

providing reliable and transparent transfer of data between different heterogeneous environments (col. 7, lines 56-62; col. 17, lines 21-27).

19. As per claim 2, Davis teaches the invention in claim 1, wherein, to transmit messages to the other peer node over the communications channel, the peer node is further configured to:

generate messages (Col. 29, lines 54-60. Data is send. Col. 10, line 9-20. Messages.);

buffer the messages, and after a window of N messages has been buffered, transmit the N messages to the other peer node over the communications channel, wherein N is an integer greater than one (Col 29, line 51-60. Window size is determined for transmission of packet. Col 49, line 61-Col 50, line 55. Data is buffered prior to transmission.).

20. As per claim 3, Davis teaches the invention as recited in claim 2, wherein the other peer node is configured to receive the transmitted messages, and after receiving M messages, transmit the acknowledgement to the peer node indicating that the M messages have been received, where M is a positive integer less than or equal to N (Col 30, lines 66-67. Sends acknowledgments to the number of received packets. Col 59, lines 34-35. Acknowledges to packets received.).

21. As per claim 5, Davis teaches the invention as recited in claim 3, wherein M is less than N (Col 29, lines 64-66. Lost packets. Col 30, lines 66-67. Acknowledge receipt of packets.).

22. As per claim 6, Davis teaches the invention as recited in claim 5, wherein, to receive acknowledgement that one or more of the transmitted messages have been received by the other peer node, the peer node is further configured to receive the acknowledgement indicating that M messages

have been received (Col 30, lines 65-67. Sends acknowledgement of packets received.), and wherein the peer node is further configured to:

shift the window in the buffer by M messages (Col 30, lines 65-67. Shift window by number of packets acknowledged.); and

transmit the messages in the shifted window to the other peer node over the communications channel (Col 29, lines 51-60. Send packets according to window size.).

23. As per claim 7, Davis teaches the invention as recited in claim 6, wherein the shifted window includes one or more messages previously transmitted to the other peer node and one or more messages not previously transmitted to the other peer node (Col 30, line 1-8. Changes window size and retransmits the packet. Col 29, lines 51-60. Send packets according to window size.).

24. As per claim 11, Davis teaches the invention as recited in claim 1, wherein each of the messages includes a sequence number for use in ordering the received messages on the other peer node (Col 2, lines 13-16. Packets are assigned sequence numbers. Receiver places data in original order.).

25. As per claim 12, Davis teaches the invention as recited in claim 3, wherein the peer node and the other peer node are further configured to:

monitor the reception and retransmission of the messages to determine reliability of the communications channel on the network (Col 30, lines 65-57. Receives acknowledgement of packets received. Col 32, lines 15-29. Examines results of through measurements, detects bandwidth.); and

adjust the values of M and N according to said reliability of the communications channel (Col 30, lines 65-67; Col 31, lines 1-3. Size of window is changed according to acknowledgements. Col 32, lines 18-22. Changes window size according to network conditions.).

26. As per claim 13, Davis teaches the invention as recited in claim 12, wherein, to adjust the values of M and N, the peer node and the other peer node are further configured to lower the values of M and N if said reliability of the communications channel is poor (Col 31, lines 61-63; Col 31, lines 1-7. Decrease window size if packets are lost.).

27. As per claim 14, Davis teaches the invention as recited in claim 12, wherein, to adjust the values of M and N, the peer node and other peer node are further configured to raise the values of M and N if said reliability of the communication channel is good (Col 26, lines 57-64; Col 30, lines 65-67. Increase window size according to acknowledgements.).

28. As per claim 15, Davis teaches the invention as recited in claim 1, wherein the other peer node is configured to (Col 8, lines 19-24. Any computer may function as a peer, and as a client and server. Col 8, lines 34-35. Different computer assume the sending and receiving roles.):

transmit other messages to the peer node over the communication channel (Col 59, lines 1-3. Transmits packets.);

receive acknowledgement that one or more of the transmitted other messages have been received by the peer node (Col 59, lines 1-3. Acknowledges packets.); and

retransmit messages not acknowledged as received by the peer node to the peer node on the communications channel (Col 73, lines 44-47. Unacknowledged packets are retransmitted.).

29. As per claim 18, Davis teaches the invention as recited in claim 1, wherein the communications channel passes through one or more relay peers, wherein the one or more relay peers are configured to receive the transmitted messages from the peer node and forward the messages to the other peer node

(Col 8, lines 3-5. Server may configured as a networked peer. Col 8, lines 29-31. Server acts as an intermediate node between sending endnode and receiving endnode.).

30. As per claim 21, Davis teaches the system wherein any peer node in a plurality of peer nodes may communicate with each other (Col 8, lines 19-24), wherein a node transmit messages to a second computer and receive messages from a third computer (Col 8, lines 37-40). Davis also teaches of transmitting messages to peer nodes, receive acknowledgements that one or more the transmitted messages have been received; and retransmitting messages not acknowledged (See rejection to claim 1 above.). Davis does not specifically teach wherein one or more other of the plurality of peer nodes are configured to connect to the communications channel, wherein the peer node is further configured to: transmit messages to the one or more other peer nodes over the communications channel; receive acknowledgements that one or more of the transmitted messages have been received by the one or more other peer nodes; and retransmit messages not acknowledged as received by the one or more other peer nodes to the one or more other peer node on the communications channel.

However, it is well known in the art that a peer is capable of communicating with more thane one peer in a peer-to-peer system and that peers may join a peer group. It would have been obvious to one of ordinary skill in the art to modify the system of Davis, Dreke, and Narisi for the sending node to communicate with more than one receiving endnode, wherein communication involves transmitting messages, receiving acknowledgement, and retransmitting messages not acknowledged to the other peer node, which would increase the sharing of resources.

31. As per claim 22, Davis teaches the invention as recited in claim 1, wherein the peer node is further configured to compare elapsed time since the messages were transmitted to a timeout limit and, if the elapsed time exceeds the timeout limit (Col 3, lines 35-36. Col 31, lines 27-38. Expiration of time-out

period.), retransmit the messages to the other peer node over the communications channel (Col 73, lines 44-47. Retransmits unacknowledged packets.).

32. Claims 4, 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis, Dreke, and Narisi, in view of Barker et al, US Patent #5,931,916 (Barker hereinafter).

33. As per claim 4, Davis does not specifically teach the peer computing system as recited in claim 3, wherein N is a positive even integer, and wherein M is equal N/2.

Barker teaches of a similar system of adjusting the window for the transmission of packets, wherein the receiving sends an acknowledgement after a certain number of messages in a sequence have been received (Col 6, lines 25-31, 63-66).

34. Davis and Barker do not explicitly teach the receiver endnode of receiving N/2 messages, however Barker does teach of sending an acknowledgment after a certain M packets have been received. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Davis, Dreke, Narisi, and Barker and for the receiver endnode to transmit an acknowledgment after any M messages including N/2 messages because doing so would allow the sender endnode to remove the acknowledged packets from the queue or buffer, transmit addition packets equal to the number of received packets, and adjust the window size, thereby improving the transmission of packets without data loss.

35. As per claim 8, Davis teaches the peer computing system as recited in claim 2, wherein each of the messages includes a sequence number for use in ordering the received messages on the other peer node (Col 2, lines 13-16. Packets are assigned sequence numbers. Receiver places the data back in its original order.), and wherein the other peer node is configured to: receive the transmitted messages (Col

59, lines 34-36. Receives packet.). Davis also teaches of transmitting an acknowledgement to received messages (Col 73, lines 1-4). However, Davis does not explicitly teach that after receiving the first M messages in the sequence of N transmitted messages as indicated by the sequence numbers, transmit the acknowledgement to the peer node indicating that the first M messages have been received, wherein M is a positive integer less than N.

Barker teaches of adjusting the window for the transmission of packets comprising receiving first messages in the sequence of N transmitted messages as indicated by the sequence numbers, and transmitting an acknowledgement indicating that the first messages have received, wherein M is a positive integer less than N (Col 6, lines 65-67; Col 7, lines 18-19).

36. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Davis, Dreke, Narisi, and Barker, which would allow the sender endnode to adjust window size according to the received sequence and remove successfully transmitted packets from its queue or buffer.

37. As per claim 9, Davis teaches the peer computing system as recited in claim 2, wherein each of the messages includes a sequence number for use in ordering the received messages on the other peer node (Col 2, lines 13-16. Packets are assigned sequence numbers. Receiver places the data back in its original order.), and wherein the other peer node is configured to: continue receiving the transmitted messages until the first M messages in the sequence of N transmitted messages as indicated by the sequence numbers are received (Col 6, lines 63-67. Sends acknowledgement due to the receipt of a certain number of packets. Col 73, lines 44-47. Packets are transmitted, and acknowledgement is send when the packets are received.) or a timeout limit from the time of initial receipt of one of the sequence of N transmitted messages is exceeded, wherein M is a positive integer less than N (Col 31, line 26-28. Expiration of time out period. Col 73, lines 44-47. Unacknowledged packets are retransmitted.).

However, Davis does not teach that if the first M messages in the sequence of N transmitted messages as indicated by the sequence numbers are received, transmit the acknowledgement to the peer node indicating that a count of messages received in continuous sequence from a first message in the sequence of N transmitted messages is M; and if the timeout limit is exceeded before the first M messages in the sequence of N transmitted messages as indicated by the sequence numbers are received, transmit the acknowledgement to the peer node indicating the count of messages received in continuous sequence from the first message in the sequence of N transmitted messages, wherein the count of messages received in continuous sequence is less than M.

38. Barker teaches of adjusting the window for the transmission of packets, wherein if the first M messages in the sequence of N transmitted messages as indicated by the sequence numbers are received, transmit the acknowledgement to the peer node indicating that a count of messages received in continuous sequence from a first message in the sequence of N transmitted messages is M (Col 7, lines 16-29. Transmits acknowledgment of sequence of received datagram, e.g. 8.) and

if the timeout limit is exceeded before the first M messages in the sequence of N transmitted messages as indicated by the sequence numbers are received, transmit the acknowledgement to the peer node indicating the count of messages received in continuous sequence from the first message in the sequence of N transmitted messages, wherein the count of messages received in continuous sequence is less than M (Col 6, lines 59-66. If time out expires, transmit acknowledgement in respect to consecutively received sequence numbered datagram. The acknowledgement acknowledges all earlier sequenced numbered datagram.).

39. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Davis, Dreke, Narisi, and Barker because the teachings of Barker would allow the sender endnode to adjust window size according to the received sequence, prevent the

retransmission of received sequence of packets, and allow the sender endnode to remove successfully transmitted packets from its queue or buffer.

40. As per claim 10, Davis teaches the invention, wherein, to receive acknowledgement that one or more of the transmitted messages have been received by the other peer node, the peer node is further configured to receive the acknowledgement indicating that the messages have been received (See rejection to claim 1 above.) However, Davis does not specifically teach the invention, wherein the peer node is further configured to: shift the window in the buffer by the count of messages received in continuous sequence; and transmit the messages in the shifted window to the other peer node over the communications channel.

Barker teaches of adjusting the window for the transmission of packets by setting the window based on the sequence of the datagram and transmitting packets based on the window (Col 6, line 59-Col 7, line 2; Col 13, lines 14-19).

41. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Davis, Dreke, Narisi, and Barker to adjust the window for the transmission of packets by setting the window based on the sequence of the datagram and transmitting packets based on the window, which would allow the sender endnode to dynamically adjust window size according to the received sequence and improve the flow of traffic by providing highest throughput without dropping packets.

42. Claim 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis, Dreke, and Narisi, in view of Ivanoff, US Patent #5,517,622 (Ivanoff hereinafter).

43. As per claims 16, Davis teaches of transmitting messages to the other peer node, receiving the acknowledgement, and retransmitting the message not acknowledged as received (See rejection to claim 1). However, Davis does not specifically teach the peer node comprising an instance of a pipe service executable within the peer node to establish the communications channel.

Ivanoff teaches of peer-to-peer system (Col 7, lines 56-57; Col 10, lines 35-38), wherein the peer node comprises an instance of a pipe service to establish a connection (Col 60, lines 49-54; Col 61, lines 1-21).

44. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Davis, Dreke, Narisi, and Ivanoff for a node to comprise an instance of a pipe service, which would provide different types of service to establish a connection with peer nodes and providing management of connections as taught by Ivanoff.

45. As per claim 17, Davis teaches a receiving endnode that receives the transmitted messages and transmits the acknowledgement to the peer node (See rejection to claim 1 above.) However, Davis does not specifically teach the system wherein the other peer node comprises another instance of the pipe service executable within the other peer node.

Ivanoff teaches of peer-to-peer system (Col 7, lines 56-57; Col 10, lines 35-38), wherein the peer node comprises an instance of a pipe service to establish a connection (Col 60, lines 49-54; Col 61, lines 1-21).

46. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Davis, Dreke, Narisi, and Ivanoff for a node to comprise an instance of a pipe service, which would provide different types of service to establish a connection with peer nodes and providing management of connections as taught by Ivanoff.

47. Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis, Dreke, and Narisi, in view of Antur et al, US Patent #6,212,558 (Antur hereinafter).

48. As per claims 19-20, Davis teaches a system wherein the communication channel passes through intermediate nodes such as router or a bridge (Col 8, lines 30-31). However, Davis does not specifically teach the invention, wherein the communications channel passes through one or more firewalls or one or more Network Address Translation (NAT) gateways.

Antur teaches of implementing security policy, wherein Antur teaches of using network address translators (Col 3, lines 38-67), and firewalls (Col 3, lines 32-36; Col 6, lines 1-4).

49. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Davis, Dreke, Narisi, and Antur to implement network address translator and firewall, which would improve security by preventing unwanted connections to peer nodes and keeping the IP addresses of peer nodes private from the rest of the network.

50. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis, Dreke, and Narisi, in view of Zhu et al, US Patent #5,768,557 (Zhu hereinafter).

51. As per claim 23, Davis teaches of assigning sequence numbers to packets to allow the receiver node to order the packets (Col 2, lines 12-16), and retransmitting packets when the receiving endnode does not receive the packets (Col 31, lines 1-3). However, Davis does not specifically teach the invention, wherein the peer node is further configured to: receive a request specifying one or more previously transmitted messages for retransmission by the peer node; and retransmit the specified one or more messages to the other peer node on the communications channel in response to the request.

Zhu teaches of receiving a request specifying previously transmitted messages for retransmission (Col 7, lines 44-49), and retransmitting the specified messages to the node (Col 7, lines 56-57).

52. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Davis, Dreke, Narisi, and Zhu to receive a request specifying previously transmitted messages for retransmission, which would allow the receiver to request data that was not received or request data when previously received data contain errors.

53. As per claim 24, Davis teaches of transmitting packets that contain the sequence number for ordering the packets (Col 2, lines 12-16). However, Davis does not specifically teach the peer computing system, wherein the request specifies a sequence number for each of the one or more specified messages.

Zhu teaches of a system for requesting retransmission of packets, wherein the request contains the sequence number of the lost packet (Col 7, lines 49-50).

54. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Davis, Dreke, Narisi, and Zhu for the request to contain the sequence number, which would allow the receiver endnode to request specific individual packets to reorder the sequence without having to request and transmit the entire sequence.

55. Claims 25-27, 29-31, 35-40, 43, 45-47, 49-51, 55-60, and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis, in view of Dreke.

56. As per claims 25 and 45, Davis teaches substantially the invention as claimed including a method, system, and an article of manufacture for dynamically adjusting windows in a peer computing system, Davis's teachings comprising:

a plurality of peer nodes operable to couple to a network (col. 8, lines 21-24. Peer nodes.), wherein each of the plurality of peer nodes comprises one or more network interfaces; wherein each network interface is configured to communicate over the network in accordance with at least one or more network transport protocols (col. 9, lines 5-8. Endnodes establish network communication session. Col. 5, lines 40-44. Protocol for controlling data packets.);

wherein the plurality of peer nodes is configured to implement a peer-to-peer environment on the network according to a peer-to-peer platform comprising one or more peer-to-per platform protocols (col. 8, lines 21-24. Peer-to-peer network.) for enabling the plurality of peer nodes to discover each other, communicate with each other; and share content in the peer-to-peer environment (col. 75, lines 3-5. Sending endnode request connection with receiving endnode. col. 9, lines 5-8, 23-34. Establish connection for sending data.);

wherein one of the plurality of peer nodes is configured to:

establish a communications channel between a network interface of the peer node and a network interface of another of the plurality of peer nodes(col. 9, lines 5-8. Endnodes establish network communication session.);

transmit messages to the other peer node over the communications channel (col. 9, lines 25-28; col. 59, lines 1-3. Transmits data.);

receive acknowledgement that one or more of the transmitted messages have been received by the other peer node (col. 59, lines 1-3. Acknowledges packets.); and

retransmit messages not acknowledged as received by the other peer node to the other peer node on the communications channel (col. 73, lines 44-47. Unacknowledged packets are retransmitted.).

57. Davis teaches substantial features of the claimed invention including said establishing, said transmitting, said receiving, and said retransmitting in a peer-to-peer environment. Davis does not specifically teach to discover comprising of obtaining an address for each discovered peer node.

Dreke teaches of peers obtaining IP addresses of interested peers (paragraph 0017).

58. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Davis and Dreke for peers to obtain the IP addresses of other peers, which would enhance the system of Davis by providing the peers with presence information to contact other peers.

59. As per claims 26 and 46, Davis teaches the invention in claims 25, and 45, wherein, to transmit messages to the other peer node over the communications channel, the peer node is further configured to:

generate messages (Col 29, lines 54-60. Data is send. Col 10, line 9-20. Messages.);

buffer the messages, and after a window of N messages has been buffered, transmit the N messages to the other peer node over the communications channel, wherein N is an integer greater than one (Col 29, line 51-60. Window size is determined for transmission of packet. Col 49, line 61-Col 50, line 55. Data is buffered prior to transmission.).

60. As per claims 27 and 47, Davis teaches the invention as recited in claim 26 and 46, wherein the other peer node is configured to receive the transmitted messages, and after receiving M messages, transmit the acknowledgement to the peer node indicating that the M messages have been received, where M is a positive integer less than or equal to N (Col 30, lines 66-67. Sends acknowledgments to the number of received packets. Col 59, lines 34-35. Acknowledges to packets received.).

61. As per claims 29 and 49, Davis teaches the invention as recited in claim 27 and 47, wherein M is less than N (Col 29, lines 64-66. Lost packets. Col 30, lines 66-67. Acknowledge receipt of packets.).

62. As per claim 30 and 50 Davis teaches the invention as recited in claim 29 and 49, wherein, to receive acknowledgement that one or more of the transmitted messages have been received by the other peer node, the peer node is further configured to receive the acknowledgement indicating that M messages have been received (Col 30, lines 65-67. Sends acknowledgement of packets received.), and wherein the peer node is further configured to:

shift the window in the buffer by M messages (Col 30, lines 65-67. Shift window by number of packets acknowledged.); and

transmit the messages in the shifted window to the other peer node over the communications channel (Col 29, lines 51-60. Send packets according to window size.).

63. As per claims 31 and 51, Davis teaches the invention as recited in claim 30 and 50, wherein the shifted window includes one or more messages previously transmitted to the other peer node and one or more messages not previously transmitted to the other peer node (Col 30, line 1-8. Changes window size and retransmits the packet. Col 29, lines 51-60. Send packets according to window size.).

64. As per claim 35 and 55, Davis teaches the invention as recited in claim 25 and 45, wherein each of the messages includes a sequence number for use in ordering the received messages on the other peer node (Col 2, lines 13-16. Packets are assigned sequence numbers. Receiver places data in original order.).

65. As per claims 36 and 56, Davis teaches the invention as recited in claim 27 and 47, wherein the peer node and the other peer node are further configured to:

monitor the reception and retransmission of the messages to determine reliability of the communications channel on the network (Col 30, lines 65-57. Receives acknowledgement of packets received. Col 32, lines 15-29. Examines results of through measurements, detects bandwidth.); and

adjust the values of M and N according to said reliability of the communications channel (Col 30, lines 65-67; Col 31, lines 1-3. Size of window is changed according to acknowledgements. Col 32, lines 18-22. Changes window size according to network conditions.).

66. As per claims 37 and 57, Davis teaches the invention as recited in claims 36 and 56, wherein, to adjust the values of M and N, the peer node and the other peer node are further configured to lower the values of M and N if said reliability of the communications channel is poor (Col 31, lines 61-63; Col 31, lines 1-7. Decrease window size if packets are lost.).

67. As per claims 38 and 58, Davis teaches the invention as recited in claims 36, and 56, wherein, to adjust the values of M and N, the peer node and other peer node are further configured to raise the values of M and N if said reliability of the communication channel is good (Col 26, lines 57-64; Col 30, lines 65-67. Increase window size according to acknowledgements.).

68. As per claims 39 and 59, Davis teaches the invention as recited in claim 25 and 45, wherein the other peer node is configured to (Col 8, lines 19-24. Any computer may function as a peer, and as a client and server. Col 8, lines 34-35. Different computer assume the sending and receiving roles.):

transmit other messages to the peer node over the communication channel (Col 59, lines 1-3. Transmits packets.);

receive acknowledgement that one or more of the transmitted other messages have been received by the peer node (Col 59, lines 1-3. Acknowledges packets.); and

retransmit messages not acknowledged as received by the peer node to the peer node on the communications channel (Col 73, lines 44-47. Unacknowledged packets are retransmitted.).

69. As per claim 40, Davis teaches the invention as recited in claim 25, wherein the communications channel passes through one or more relay peers, wherein the one or more relay peers are configured to receive the transmitted messages from the peer node and forward the messages to the other peer node (Col 8, lines 3-5. Server may be configured as a networked peer. Col 8, lines 29-31. Server acts as an intermediate node between sending endnode and receiving endnode.).

70. As per claims 43 and 63, Davis teaches the invention as recited in claims 25 and 45, wherein the peer node is further configured to compare elapsed time since the messages were transmitted to a timeout limit and, if the elapsed time exceeds the timeout limit (Col 3, lines 35-36. Col 31, lines 27-38. Expiration of time-out period.), retransmit the messages to the other peer node over the communications channel (Col 73, lines 44-47. Retransmits unacknowledged packets.).

71. As per claim 60, Davis teaches the article of manufacture as recited in claim 45, wherein the software instructions are further executable to implement: configuring the peer node as a relay peer, wherein a communications channel between a third peer node of the plurality of peer nodes and the other peer node passes through the peer node; the relay peer node receiving messages transmitted from the third peer node to the other peer node; and forwarding the messages to the other peer node (Col 8, lines 1-5, 19-24. Server as networked peer. Any computer may also function as a peer. Col 8, lines 29-31. Server acts as intermediate node between sending and receiving endnodes.).

72. Claims 28, 32-34, 48, and 52-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis and Dreke, in view of Barker.

73. As per claims 28 and 48, Davis does not specifically teach the peer computing system wherein N is a positive even integer, and wherein M is equal N/2.

Barker teaches of a similar system of adjusting the window for the transmission of packets, wherein the receiving sends an acknowledgement after a certain number of messages in a sequence have been received (Col 6, lines 25-31, 63-66).

74. Davis and Barker do not explicitly teach the receiver endnode of receiving N/2 messages, however Barker does teach of sending an acknowledgment after a certain M packets have been received. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Davis, Dreke, and Barker and for the receiver endnode to transmit an acknowledgment after any M messages including N/2 messages, which would allow the sender endnode to remove the acknowledged packets from the queue or buffer, transmit addition packets equal to the number of received packets, and adjust the window size, thereby efficiently transmitting packets without data loss.

75. As per claims 32 and 52, Davis teaches the peer computing system, wherein each of the messages includes a sequence number for use in ordering the received messages on the other peer node (Col 2, lines 13-16. Packets are assigned sequence numbers. Receiver places the data back in its original order.), and wherein the other peer node is configured to: receive the transmitted messages (Col 59, lines 34-36. Receives packet.). Davis also teaches of transmitting an acknowledgement to received messages (Col 73, lines 1-4). However, Davis does not specifically teach that after receiving the first M messages in the sequence of N transmitted messages as indicated by the sequence numbers, transmit the

acknowledgement to the peer node indicating that the first M messages have been received, wherein M is a positive integer less than N.

Barker teaches of adjusting the window for the transmission of packets comprising receiving first messages in the sequence of N transmitted messages as indicated by the sequence numbers, and transmitting an acknowledgement indicating that the first messages have received, wherein M is a positive integer less than N (Col 6, lines 65-67; Col 7, lines 18-19).

76. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Davis, Dreke, and Barker, which would allow the sender endnode to adjust window size according to the received sequence and remove successfully transmitted packets from its queue or buffer.

77. As per claims 33 and 53, Davis teaches the peer computing system, wherein each of the messages includes a sequence number for use in ordering the received messages on the other peer node (Col 2, lines 13-16. Packets are assigned sequence numbers. Receiver places the data back in its original order.), and wherein the other peer node is configured to: continue receiving the transmitted messages until the first M messages in the sequence of N transmitted messages as indicated by the sequence numbers are received (Col 6, lines 63-67. Sends acknowledgement due to the receipt of a certain number of packets. Col 73, lines 44-47. Packets are transmitted, and acknowledgement is send when the packets are received.) or a timeout limit from the time of initial receipt of one of the sequence of N transmitted messages is exceeded, wherein M is a positive integer less than N (Col 31, line 26-28. Expiration of time out period. Col 73, lines 44-47. Unacknowledged packets are retransmitted.). However, Davis does not specifically teach that if the first M messages in the sequence of N transmitted messages as indicated by the sequence numbers are received, transmit the acknowledgement to the peer node indicating that a count of messages received in continuous sequence from a first message in the sequence of N transmitted messages is M;

and if the timeout limit is exceeded before the first M messages in the sequence of N transmitted messages as indicated by the sequence numbers are received, transmit the acknowledgement to the peer node indicating the count of messages received in continuous sequence from the first message in the sequence of N transmitted messages, wherein the count of messages received in continuous sequence is less than M.

78. Barker teaches of adjusting the window for the transmission of packets, wherein if the first M messages in the sequence of N transmitted messages as indicated by the sequence numbers are received, transmit the acknowledgement to the peer node indicating that a count of messages received in continuous sequence from a first message in the sequence of N transmitted messages is M (Col 7, lines 16-29. Transmits acknowledgment of sequence of received datagram, e.g. 8.) and

if the timeout limit is exceeded before the first M messages in the sequence of N transmitted messages as indicated by the sequence numbers are received, transmit the acknowledgement to the peer node indicating the count of messages received in continuous sequence from the first message in the sequence of N transmitted messages, wherein the count of messages received in continuous sequence is less than M (Col 6, lines 59-66. If time out expires, transmit acknowledgement in respect to consecutively received sequence numbered datagram. The acknowledgement acknowledges all earlier sequenced numbered datagram.).

79. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Davis, Dreke, and Barker because the teachings of Barker would allow the sender endnode to adjust window size according to the received sequence, prevent the retransmission of received sequence of packets, and allow the sender endnode to remove successfully transmitted packets from its queue or buffer.

80. As per claims 34 and 54, Davis teaches the invention, wherein, to receive acknowledgement that one or more of the transmitted messages have been received by the other peer node, the peer node is further configured to receive the acknowledgement indicating that the messages have been received (See rejection to claim 1 above.) However, Davis does not teach the invention, wherein the peer node is further configured to: shift the window in the buffer by the count of messages received in continuous sequence; and transmit the messages in the shifted window to the other peer node over the communications channel.

Barker teaches of adjusting the window for the transmission of packets by setting the window based on the sequence of the datagram and transmitting packets based on the window (Col 6, line 59-Col 7, line 2; Col 13, lines 14-19).

81. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Davis, Dreke, and Barker to adjust the window for the transmission of packets by setting the window based on the sequence of the datagram and transmitting packets based on the window, which would allow the sender endnode to dynamically adjust window size according to the received sequence, and improve the flow of traffic by providing highest throughput without dropping packets.

82. Claims 41-42 and 61-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis and Dreke, in view of Antur.

83. As per claims 41-42 and 61-62, Davis teaches a system wherein the communication channel passes through intermediate nodes such as router or a bridge (Col 8, lines 30-31). However, Davis does not specifically teach the invention, wherein the communications channel passes through one or more firewalls or one or more Network Address Translation (NAT) gateways.

Antur teaches of implementing security policy, wherein Antur teaches of using network address translators (Col 3, lines 38-67), and firewalls (Col 3, lines 32-36; Col 6, lines 1-4).

84. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Davis, Dreke, and Antur to implement network address translators or firewalls, which would improve the security by preventing unwanted connections to peer nodes and keeping the IP addresses of peer nodes private from the rest of the network.

85. Claims 44 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis and Dreke, in view of Zhu.

86. As per claims 44 and 64, Davis teaches of assigning sequence numbers to packets to allow the receiver node to order the packets (Col 2, lines 12-16), and retransmitting packets when the receiving endnode does not receive the packets (Col 31, lines 1-3). However, Davis does not specifically teach the invention, wherein the peer node is further configured to: receive a request specifying one or more previously transmitted messages for retransmission by the peer node; and retransmit the specified one or more messages to the other peer node on the communications channel in response to the request.

Zhu teaches of receiving a request specifying previously transmitted messages for retransmission (Col 7, lines 44-49), and retransmitting the specified messages to the node (Col 7, lines 56-57).

87. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Davis, Dreke, and Zhu to receive a request specifying previously transmitted messages for retransmission, which would allow the receiver to request data that was not received or request data when previously received data contain errors.

Conclusion

88. A shortened statutory period for reply to this Office action is set to expire THREE MONTHS from the mailing date of this action.

89. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua Joo whose telephone number is 571 272-3966. The examiner can normally be reached on Monday to Thursday 8AM to 5PM and every other Friday.

90. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J. Flynn can be reached on 571 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

91. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

March 24, 2007
JJ

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